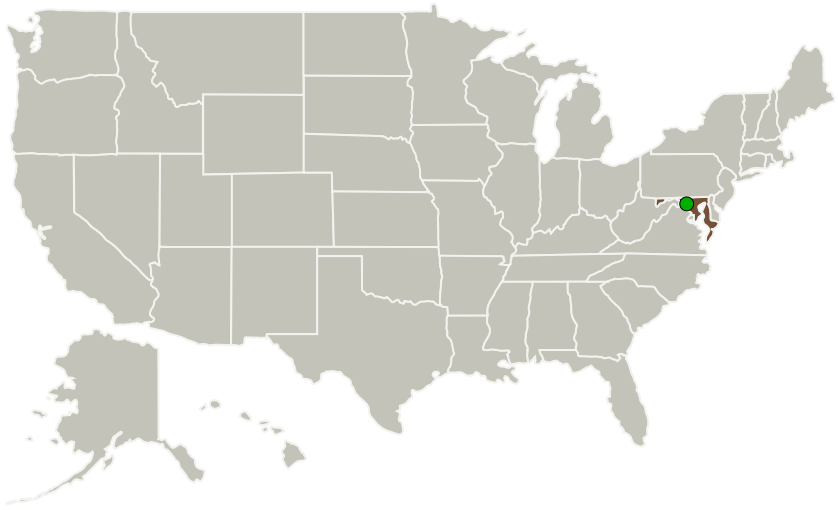
# Multi-Purpose Radio Signal Generation System, Phase I

Completed Technology Project (2010 - 2010)

## Project Introduction

The MRSiG will be able to replace many of the expensive, highly specialized RF signal generators with cheaper generic boxes that can be customized as the technologies are updated. MRSiG boxes can be utilized throughout the entire RF hardware development cycle, from the breadboard to the flight stages. Their relatively low cost point will allow more simulators in the labs, and less resource contention for developing projects. The portability of the MRSiG lends itself readily to testing outside the lab, including environmental test chambers and during spacecraft integration. In particular, MRSiG could be utilized as a GPS simulator, replacing the Spirent GPS signal generators currently in use. These boxes could be utilized to simulate anything from lunar ground communication, ground-lunar relay communication, and even lunar to Earth communications. MRSiG could potentially be instrumental in performing formation flying or rendezvous and docking simulations if RF data is exchanged.

## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| Emergent Space Technologies, Inc. | Lead Organization | Industry | Greenbelt, Maryland |
| Goddard Space Flight Center(GSFC) | Supporting Organization | NASA Center | Greenbelt, Maryland |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## Table of Contents

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| Primary U.S. Work Locations |
| --- |
| Maryland |

## Project Transitions

**January 2010:** Project Start

**July 2010:** Closed out

**Closeout Documentation:**

- Final Summary Chart*(https://techport.nasa.gov/file/139975)*

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Emergent Space Technologies, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

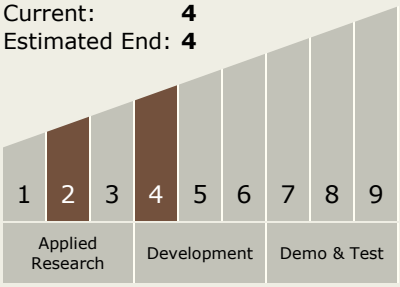
Carlos Torrez

**Principal Investigator:**

Jason C Mitchell

## Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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## Technology Areas

**Primary:**

- TX17 Guidance, Navigation, and Control (GN&C)
  - TX17.3 Control Technologies
    - TX17.3.1 Onboard Maneuvering / Pointing / Stabilization / Flight Control Algorithms

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System